

Hardware / Modding

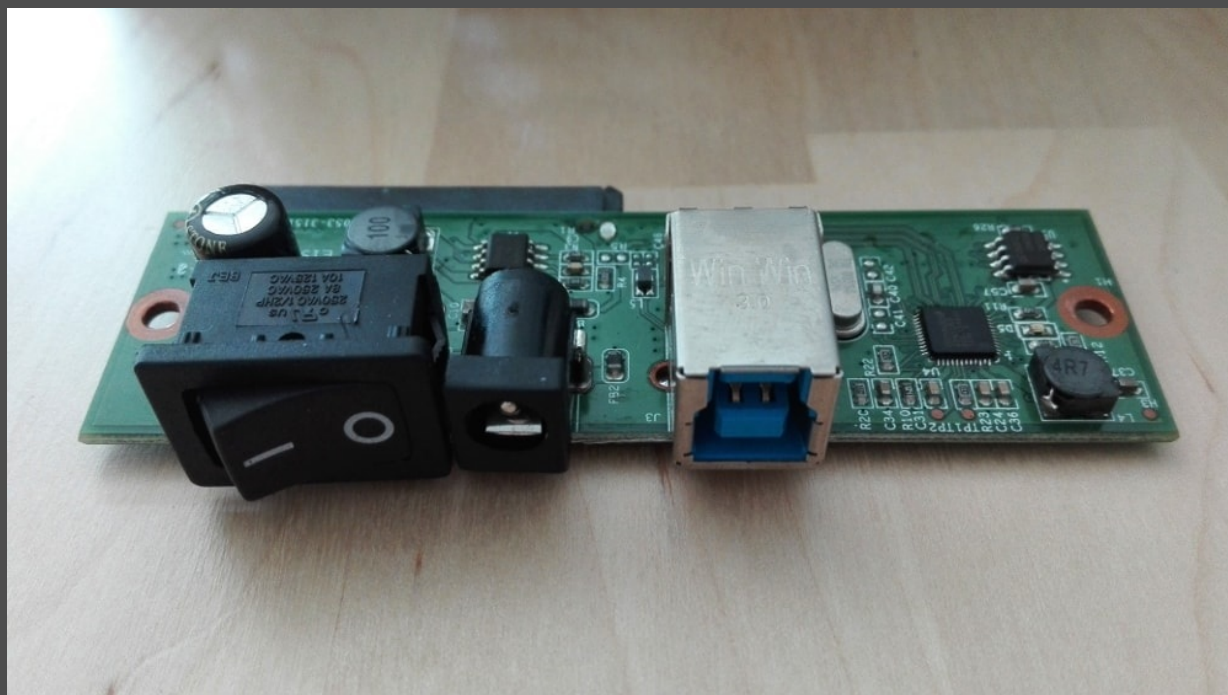
Preface

Sometimes you just have to fail. You can find this shitty or get unnecessarily upset about it, but sometimes you plan everything to 99% and overlook the last 1%. This has never happened to me before in such a way that I was really upset about it. Small mistakes could always be corrected quickly and the project duration was usually not that long. But now I started the [Datenknecht](#) project a few weeks ago and had to work properly. Not only have I misjudged myself so much in that time. No, also for the first time in my life I had to be brought back to the ground of facts by the 1%. Sometimes you just have to fail to win at the end.

So what caused the project to fail? Nothing. Because the project has not failed, but is only delayed by a few days, perhaps even by a few weeks (or years?). Yes, a mistake was made and it destroyed the theoretical result, but that's how projects work. A project is always a one-off project, which has not yet been executed in this way and a scheduled start and end date has been set. After a failed project you have to analyse the facts and give an assessment of the succession. For this project it will be repair. Nevertheless, I would like to guide you through the complete analysis so that we can learn from my mistake and use it for our own work.

In my defense, however, I must say that the project as a whole was worm-proof. I had to discard almost 100% of the actual planning and adapt the further processes again and again. Since I already had all (wrong) materials at home, I roughly counted on seven days. At the most. What can be so difficult to install an external hard disk in a computer? Screw, saw or grind around the case a bit. Fix the hard disk and re-solder the wiring. Done. No, that's not how it works.

The project in detail

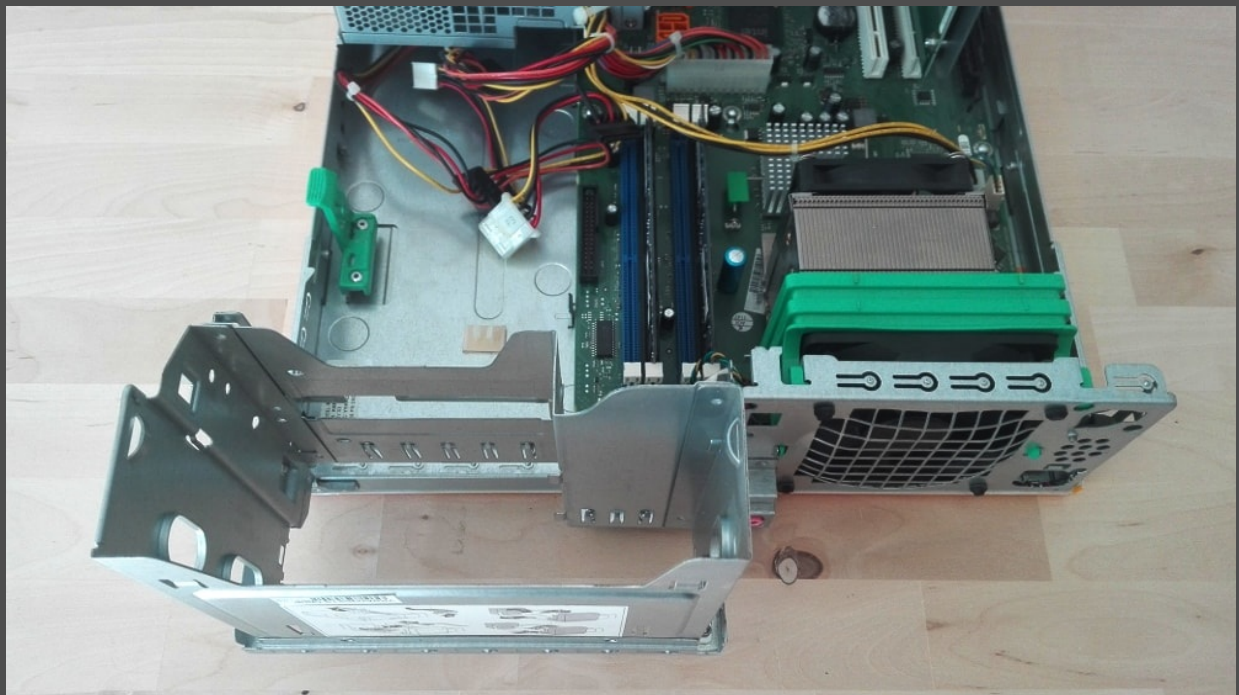


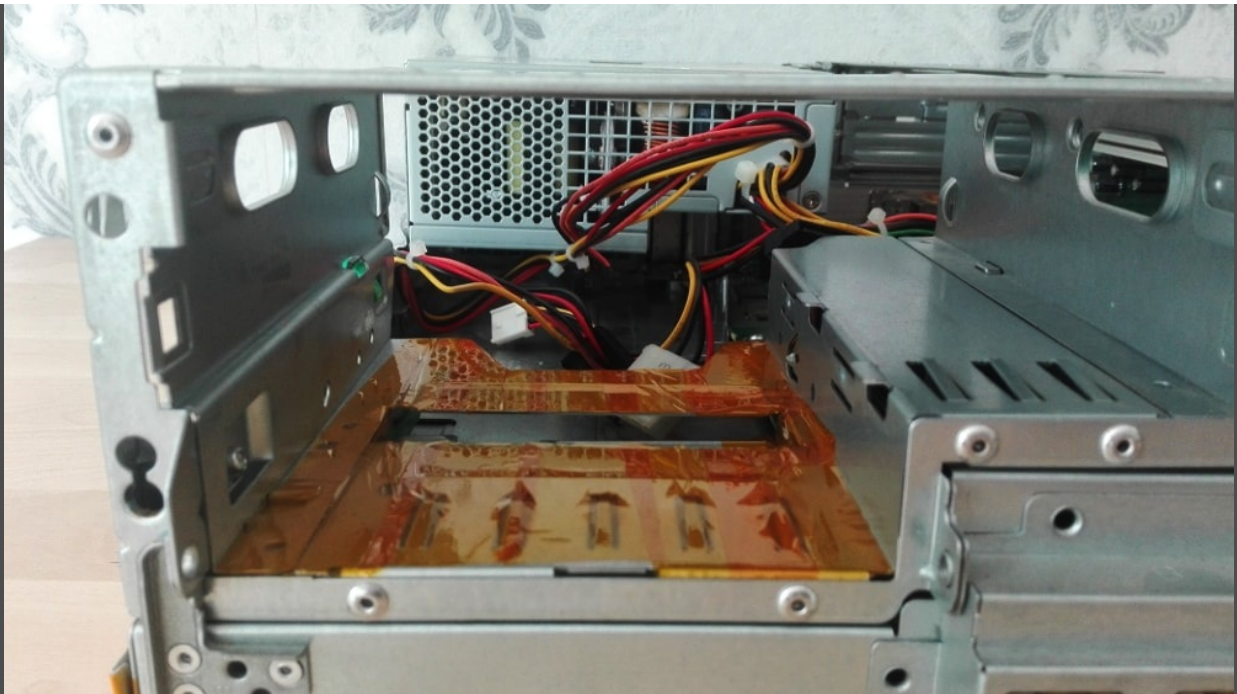
This PCB belongs to an external hard drive I bought some time ago and was lying around in my cupboard at the beginning of my project. I couldn't find out what kind of brand or model it was, nor could I find any other information about it on the Internet. The power supply was missing, the case and also the original hard disk was no longer available. I had a 1TB hard drive that fit. Why would I want to install this in the computer and not take a hard disk that could be connected to the computer with the right cables? There were several reasons for this. I only had a normal 80GB hard drive, which was simply not enough for me. Since I'm setting up an IPFS server, I wanted to invest more right away. My plan was to install the first disk with a lot of work and then run the server. If I saved the money for e.g. a 3TB hard disk, and then simply install it. The data would then be copied to these and the first would then be used as a day backup disk. Like I said, that was the plan.



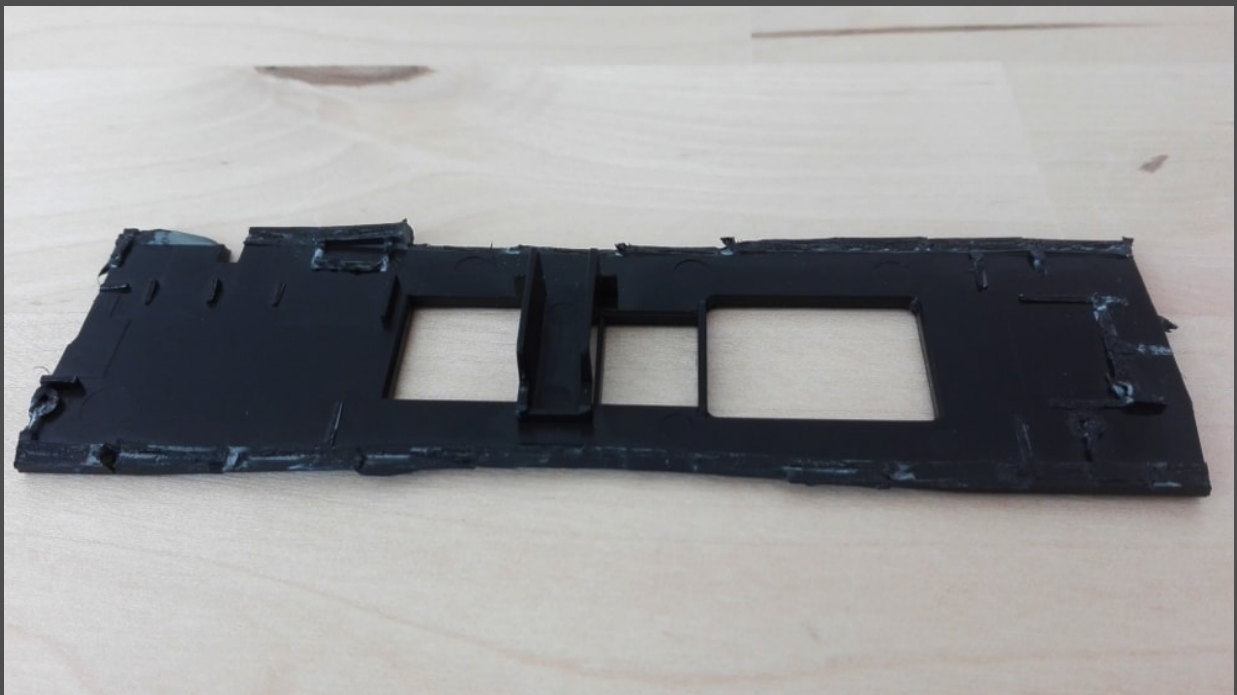
I wanted to install the hard disk so that all cables go out to the back. Unfortunately, the Esprimo E5925 is really unsuitable for this idea. All regular cables go backwards, but they are already occupied by the rest of the hardware. On the right side is the power supply. On the left you can install external hardware, e.g. graphics or network cards. Somehow I didn't want to succeed in pushing the external hard disk somewhere between. In this computer, hard drives are usually just under the power supply and the DVD drive. Afterwards they are not fixed or I simply did not find the connecting elements. But there is a second bay under the first drive, where the hard disk should find its place. You could remove a piece of plastic from the front of the case and then you would have to close it again.

Nevertheless, the idea started to please me. If I connected the built-in hard disk via an extra power plug, I could separate the hardware from the actual computer. In an emergency, I could turn both on and off independently of one another. This also applies to the USB port, which I would then remove to the front. On the one hand, I can quickly copy a backup to another laptop and don't always have to crawl to the computer. On the other hand, it is also possible for me to remove this quickly from the overall system, e.g. in the event of an attack by unauthorized persons. It wouldn't look so nice anymore, but I prefer function to design anyway.

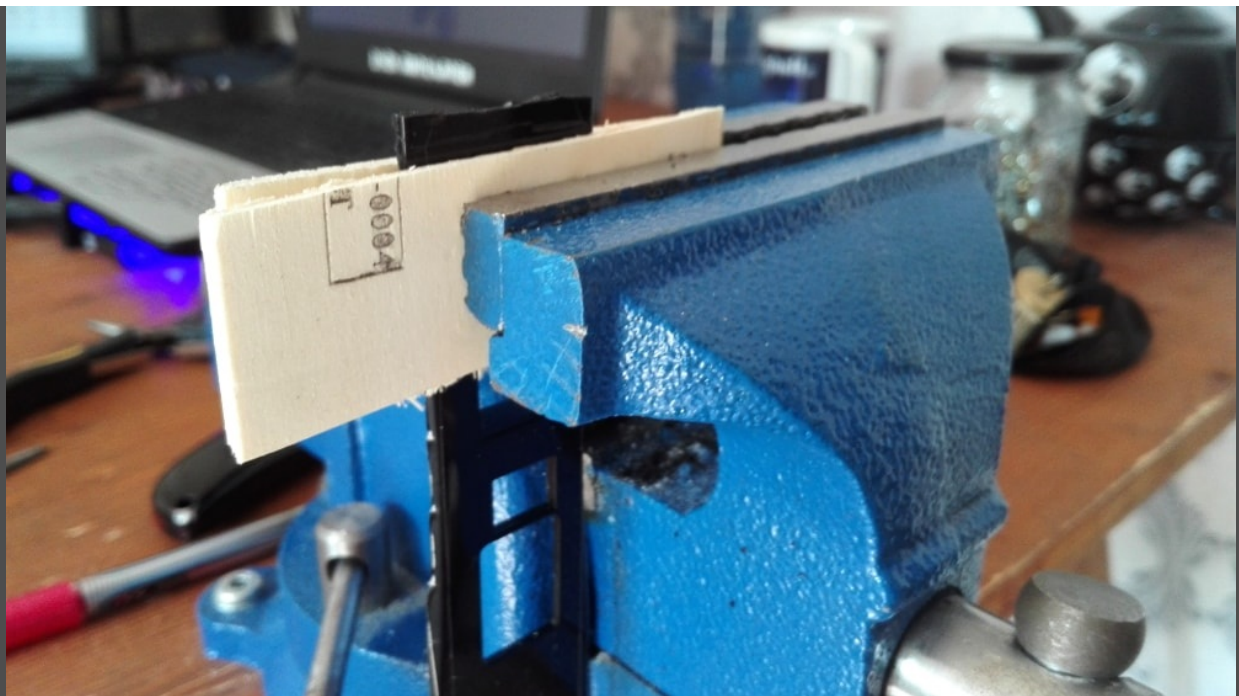




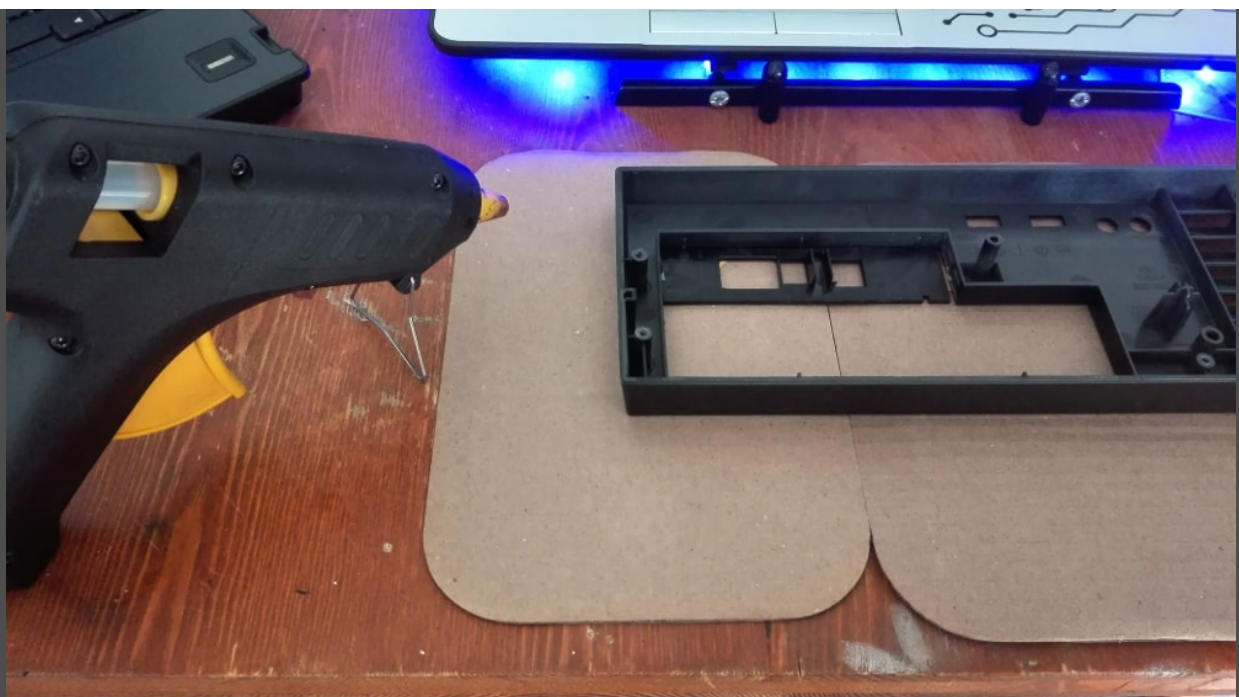
In order to put the idea into concrete terms, I examined the area in the computer in more detail. After a few minutes I could see that the compartment is movable and can be folded forward. Whether this turns out to be a real advantage, I cannot say at this point. Nevertheless, it has to be better if you have movable modules. This makes the space for the hardware a little larger and more mobile. Since the hard disk should not lie on the bare metal, I covered it preventive with special adhesive tape so that it can come to an unwanted short circuit.





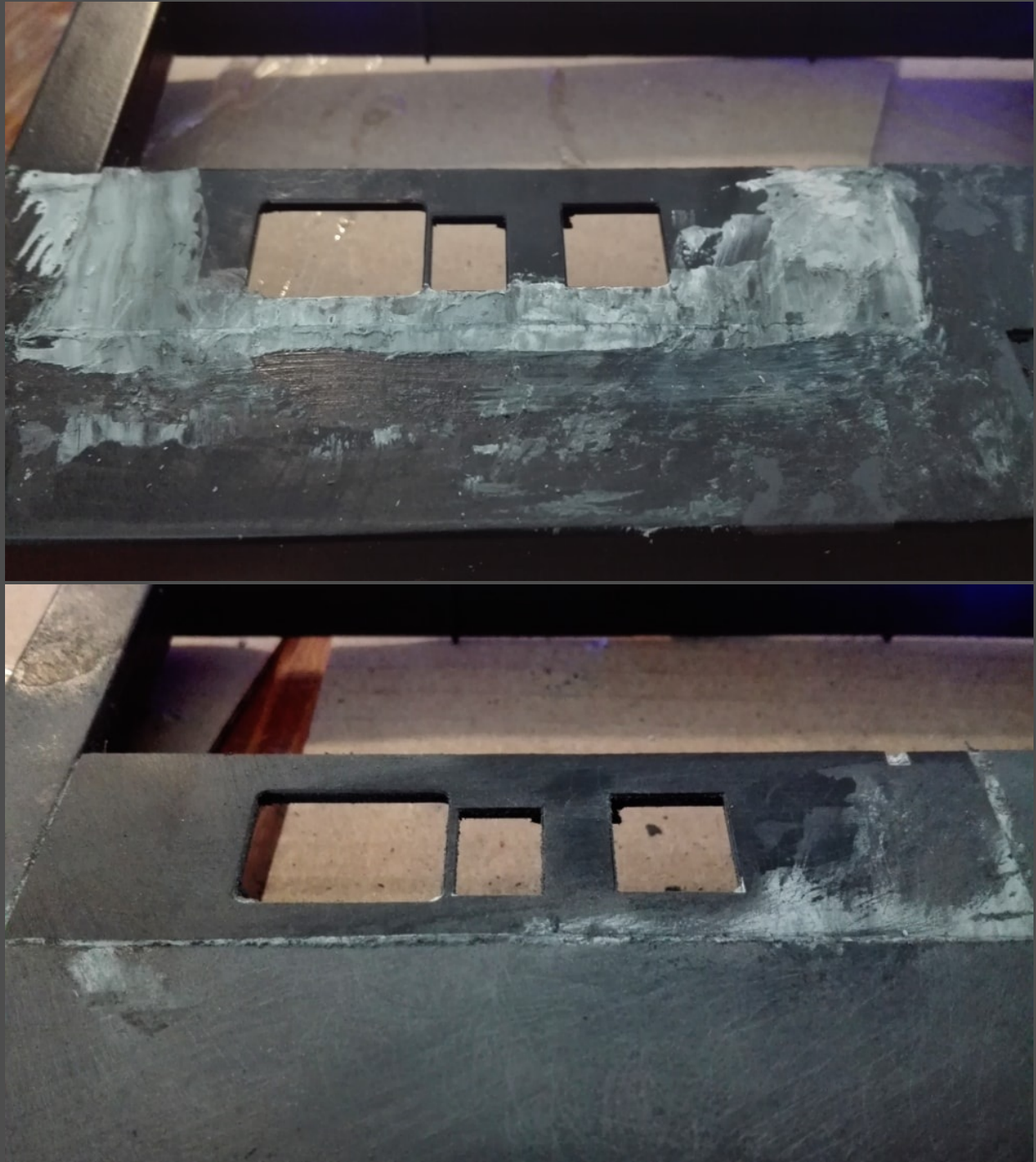


By chance I found the front cover of the external hard disk that I could install. This consisted only of an easy-to-process plastic. First I cut off all superfluous pieces from the back with a pair of pliers. Then I created the actual front of the computer and carved the rectangular hole with a scribe on the component. So that everything became a little bit tidier, I sanded everything superfluous with a coarse file. In the last screen I clamped the plastic between two old wooden plates, so that the parallel vice does not scratch the plastic too much when sawing. I still can't explain why I sawed so crooked on the right side, because I kept exactly to the line drawn.

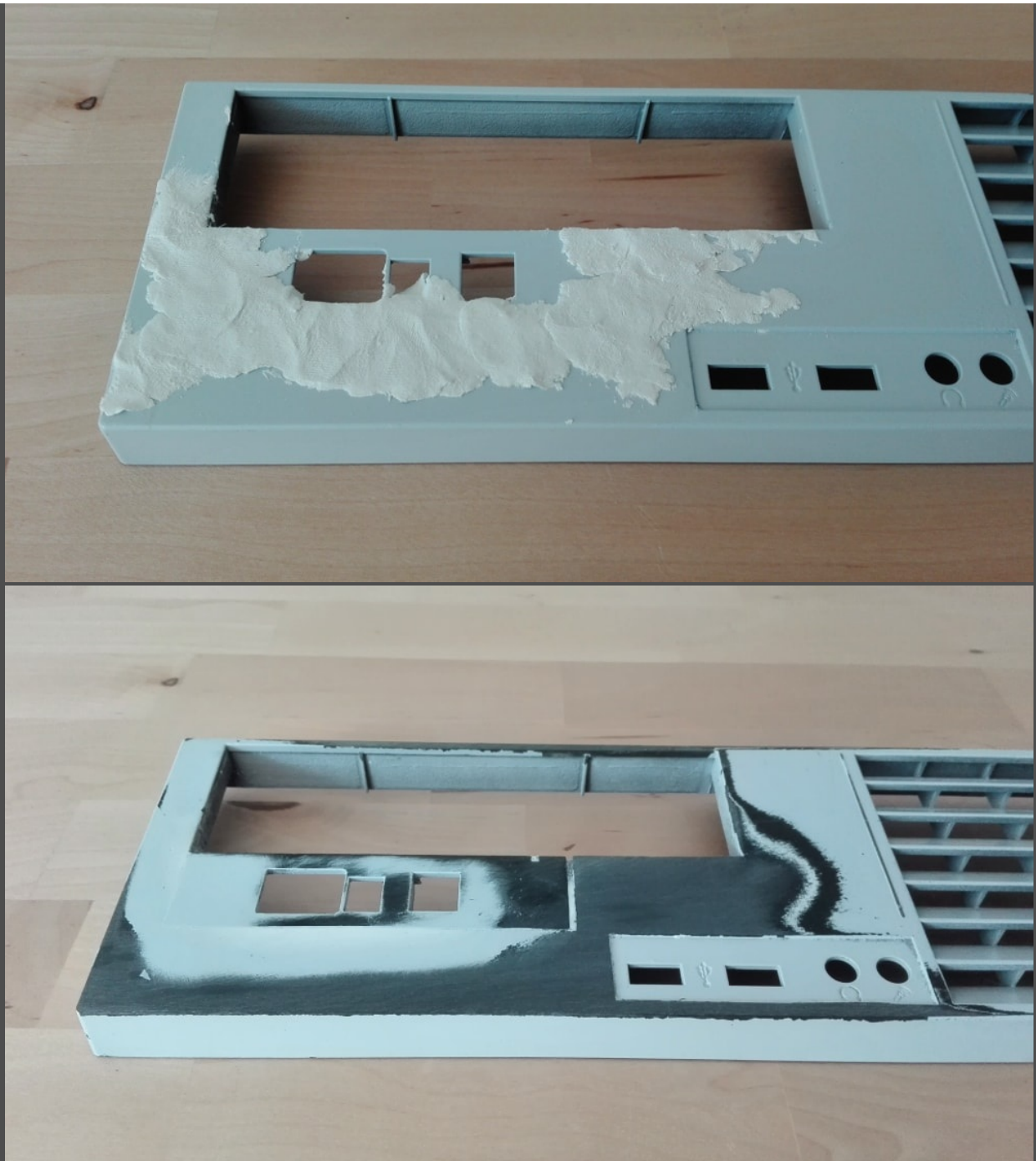


To fix the plastic plate I decided to use hot glue. I was also able to fill up the right side (which later turned out to be a mistake). In the future I will have to look at other techniques, because it didn't

work as well as I had thought. hot glue is good and durable, but it is also flexible when the two connection points are far apart. My idea for the future is to put another piece of plastic in between to make it all a little stiffer and firmer. It is also very unclean to work with the hot melt glue gun and the whole parts are smeared with superfluous material. If you want to glue something together quickly, that is enough, but unfortunately not suitable for a reasonable case mod.



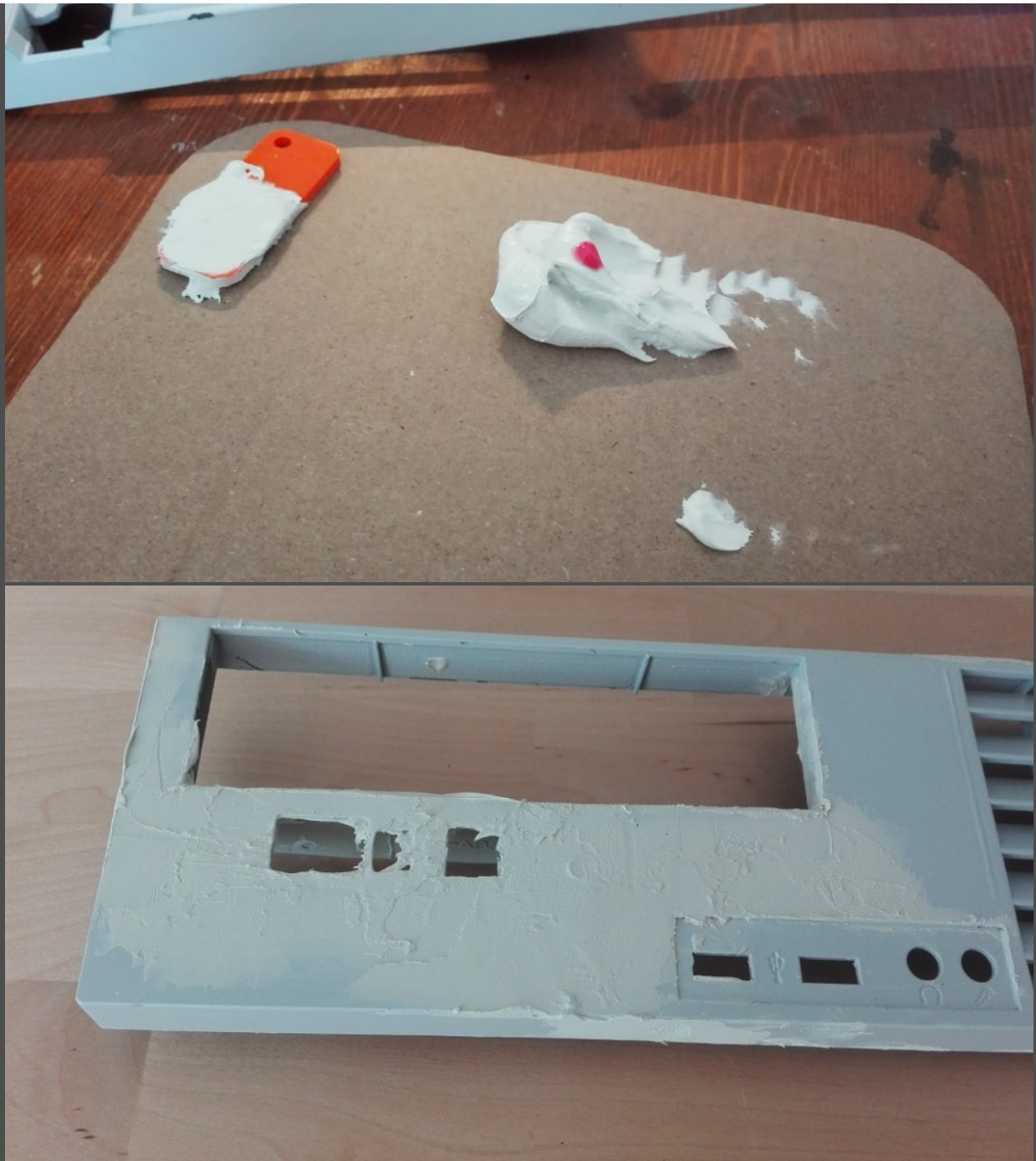
Although I had already had bad experiences with the Brother MFC-260C printer restoration, I didn't even want to use Plasto from Revell as a filler. First, I don't give up so quickly and second, I give every product a second chance. I want to know exactly why I can't use something so that I can pay more attention to the properties of the next product. Unfortunately, this turned out to be another bad idea. There are so many chemicals in Plasto that the first layer of the paint is softened, has mixed with the filler and thus formed lumps. These stuck almost everywhere (not only to the component) and even after sanding it didn't look any better. In addition, the filler cannot be sanded off with water even after the required drying time. All in all, it was a disaster and only broke more instead of repairing. Keep quiet about something getting sensibly filled.



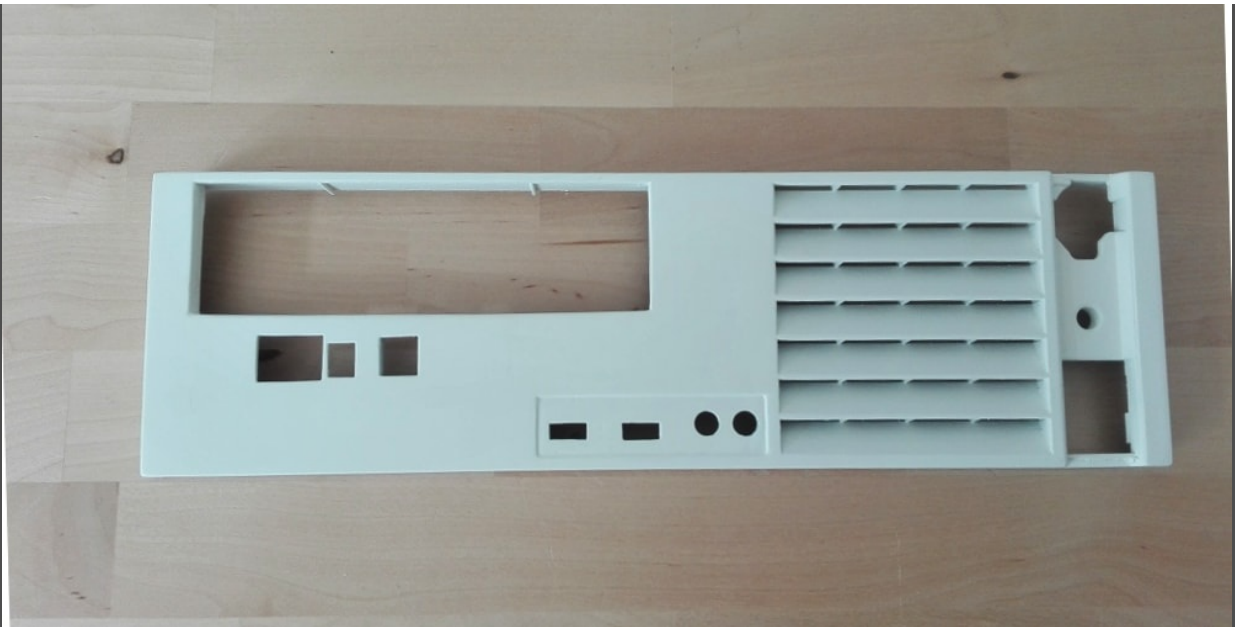
Another mistake I only noticed through a video by Eric Strebel. All this time, I used a light can of paint instead of a primer. It is easy to sand, but does not help if you want to repair very small cracks and unevenness. You'd have to spray 20 coats on it, and that's a waste. Only later I bought a primer and noticed the massive difference. This saves hours when repairing surfaces. In the next step I bought and used a self-hardening plasticine from the creative market instead of an expensive model filler. With this you can knead small figures and then let them dry in the air, they have almost the same consistency as clay. I wanted to try it out and see if it works as a cheap replacement in this case too. It works, but it won't be pretty. Maybe you can use this as emergency material for certain projects, but I don't recommend it for a prototype or something similar. I have to test this on individual pieces of plastic and not on an ongoing project.



When sanding I noticed that I still need a piece of plastic for the upper edge and have installed this afterwards with hot glue. Here's a little tip. If you disassemble old hardware, put the cases and other plastic parts in a special box or whatever. So you always have enough filling material and don't have to buy extra ABS. You protect the natural environment and save earth-chan.



After watching another video of Eric, I ordered a real polyester body filler on the internet. Unfortunately I didn't mix it properly and I didn't have a real spatula either but only an old 3d printed piece from the Maker Faire in Dortmund. Nevertheless, it worked quite well even if it all looked a bit messy at the beginning. Body filler can be sanded very well, even if it smells like a fart from hell. I used it to smear the whole front, so that other areas (which you can't see on the photos) were filled.



The process then repeats itself again and again. First the primer, then fill the holes with the filler and sand down. Every second pass you use a finer sandpaper, so that it becomes really tidy and clean like a professional. With me the left upper edge was still a little slanting, which I want to fix after the first test. Otherwise I could paint the front of the case with black paint and it looked really good. Time for a first real test to see if everything was done right.



When testing, it has to be said that the opening mechanism of the Fujitsu E5730 is really not user friendly. To get to the point, when I have to watch a video about opening the computer case, the product design sucks. Period. That's all there is to it. First I had to screw the front to the actual metal and clamp the element for the on/off button. Then I had to insert the board with the plugs into the corresponding openings. When I have done all this, I have to insert the actual hard disk into the board. I only have very little space and I don't have to look up hellishly to break anything (ha, ha). After I have assembled everything I have to push everything onto the frame of the computer with one last hard back.

After watching the disaster for a few minutes, I packed everything back in the box and put the project in the cupboard. At that moment I didn't care where the mistake was, because I needed a break to react really badly. So I drew relaxing music (The ugly Art by Machine Girl) on my player and went for a walk in the forest. After a few hours of beating stones and dead trees, I started writing this article. So you can see that no matter how well you have planned everything, you can always fail. What caused the error and how we will solve the problem, we will see in the next documentation.